



INSARAG Guidelines 2026

Appendix 2.1: Roadmap for USAR National Capacity

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Abbreviations

BoO	Base of Operations
ERS	Emergency Response Section
EMT	Emergency Medical Team
GDACS	Global Disaster Awareness and Coordination System
GRG	Guidelines Review Group
HNPW	Humanitarian Networks and Partnerships Week
HNS	Host Nation Support
IEC	INSARAG External Classification
IER	INSARAG External Reclassification
IMTST	Information Management Technical Support Team
IRNAP	INSARAG-Recognised National Accreditation Process
INSARAG	The International Search and Rescue Advisory Group
ISG	INSARAG Steering Group
LEMA	Local Emergency Management Authority
NAP	National Accreditation Process
NGOs	Non-governmental organisations
OCHA	United Nations Office for the Coordination of Humanitarian Affairs
OSOCC	On-Site Operations Coordination Centre
RDC	Reception and Departure Centre
RSB	Response Support Branch
UCC	USAR Coordination Cell
USAR	Urban Search and Rescue
UN	United Nations
UNDAC	United Nations Disaster Assessment and Coordination
VOSOCC	Virtual On-Site Operations Coordination Centre

1 Introduction

This Appendix provides Member States, organisations, and partners with a structured framework to develop Urban Search and Rescue (USAR) capacity in alignment with INSARAG guidelines. It is intended for decision-makers, planners, and operational leaders who are responsible for developing and sustaining national or organisational technical rescue teams.

2 Technical Rescue Disciplines

First responder organisations, whether community-based or professional, are often faced with complex rescue situations that require specialised skills, equipment, and procedures. While some agencies are equipped to manage such incidents, many encounter scenarios that exceed their normal operational capacity. To address this, organisations may develop technical rescue teams capable of responding to specialised or high-risk environments.

New teams often begin by building capability in a single discipline, such as rope or water rescue before expanding to a multi-discipline technical rescue capacity. Others may establish separate teams with distinct specialist functions.

This manual references the following principal technical rescue disciplines: **Confined Space Rescue:**

Operations conducted within enclosed spaces not designed for human occupancy, where entry or egress is limited. Spaces such as sewers, tanks, vats, or silos. These pose significant risks including entrapment, oxygen deficiency, or exposure to toxic atmospheres.

- **Water and Ice Rescue:**

Operations in or around bodies of water including lakes, rivers, floods, swamps, and coastal environments. Sub-disciplines include swift water, calm water, underwater, surf, and ice rescue. Each requires specialised training and equipment.

- **Collapse (Structural) Rescue:**

Response to partial or total structural failure of buildings or infrastructure, often following earthquakes, explosions, or similar sudden-onset events. Teams are trained and equipped for search, access, rescue, and initial medical care within collapsed structures.

- **Trench / Excavation Rescue:**

Operations involving the rescue of individuals trapped by the collapse of trenches or excavations, commonly associated with construction activities. These rescues require precise shoring and stabilisation techniques to ensure responder and victim safety.

- **Rope (Vertical) Rescue:**

Conducted in high-angle or low-angle environments such as cliffs, ravines, towers, or high-rise structures. Rope rescue techniques are used to gain access, stabilise, and evacuate casualties safely using technical rope systems.

- **Industrial and Agricultural Rescue:**

Involves incidents within industrial, manufacturing, or agricultural settings where individuals may become trapped by machinery, within confined spaces, or under heavy equipment.

- **Vehicle Rescue:**

Focused on extrication of casualties from vehicles following collisions. Requires specialist tools, stabilisation techniques, and coordination with medical responders.

- **Transportation Rescue:**

Encompasses complex incidents involving various modes of transportation, including aircrafts, trains, mass-transport vehicles etc. These incidents often involve multiple

casualties and entrapments which demand coordinated inter-agency response and advanced rescue techniques.

3 Considerations Before Forming a Team

3.1 Determining the Need for a Team

The first step is to assess whether a technical rescue or USAR team is required within the community. This determination should be based on a comprehensive risk analysis identifying the likelihood and consequences of relevant hazards.

The sponsoring organisation (whether governmental, non-governmental, or donor) must conduct an objective and thorough assessment of community risk and existing response capacity. If the identified risks are already covered by an external response team with reliable access into the jurisdiction, forming a separate team may not be necessary.

3.2 Identifying the Type of Team Required

Following the risk assessment, planners should define the type and scope of the team required. The team may be single-discipline (e.g., rope, water, or confined space rescue) or multi-discipline, capable of addressing a wider range of technical rescues. The level of risk, frequency of incidents, and community vulnerability will guide the decision on the appropriate capability to develop.

3.3 Securing Organisational Commitment

The establishment of a technical rescue team requires sustained commitment across all levels of the sponsoring organisation. Leadership, management, and operational personnel must collectively understand the resource and time implications. Consideration should be given to how technical rescue training and deployments will affect overall staffing, workload, and routine emergency operations. Commitment must be comprehensive and organisation-wide to ensure both the success and sustainability of the technical rescue team.

3.4 Assessing Costs and Funding Sustainability

Planners must evaluate both start-up and ongoing operational costs. Start-up costs primarily involve equipment procurement and initial training, while operational costs include refresher training, equipment maintenance, consumables (such as medical supplies with expiry dates), and personnel costs for paid staff. Funding sources may include local government budgets, inter-agency cost sharing, or external donor support. Sustainability must be demonstrated before proceeding with team establishment.

3.5 Securing Support from Authorities and Decision-Makers

Forming a technical rescue or USAR team requires the endorsement of senior management, elected officials, and where applicable, national or local government. Their support is critical for authorising funding, approving resource allocation, and enabling inter-agency cooperation.

Decision-makers often require justification for such investment. Planners should be prepared to present clear evidence of community risk, capability gaps, and the potential consequences of inadequate preparedness. Key questions from fiscal or political authorities may include:

- What is the justification for investing in this specialized capability and equipment?
- How many relevant incidents occurred in recent years?

- Given our successful track record, what factors now necessitate this addition? Emergency managers must be able to explain the operational, reputational, and safety risks of maintaining an under-capable response. Documentary evidence such as hazard assessments and lessons identified from prior incidents should support the proposal for developing a dedicated team.

3.6 Leveraging Regional and Mutual Aid Resources

Before establishing a new team, planners should explore whether technical rescue capability already exists within neighbouring jurisdictions. Developing a shared or multi-agency response model can provide an efficient and cost-effective solution while ensuring appropriate coverage across regions. Formal mutual aid agreements should be established where feasible.

3.7 Anticipating Challenges and Risks

Technical rescue operations carry inherent risks to personnel. These risks can be reduced but not eliminated through appropriate training, safe systems of work, and suitable equipment.

Statistics show that many fatalities in rescue situations involve untrained or ill-equipped rescuers. Common hazards include asphyxiation, falls, entrapment, and drowning. Attempting to form or deploy a team without the necessary foundational training, equipment, or supervision is unsafe and unacceptable.

A comprehensive USAR capability encompasses five functional components:

- Management
- Search
- Rescue
- Medical
- Logistics

Recruiting and retaining personnel with appropriate skills such as medical providers, engineers, and canine handlers can be a significant challenge and must be addressed early in planning.

3.8 What laws, regulations, and standards affect development of a team?

Numerous regulations govern different types of rescues, and all responders must comply for safety and liability reasons. Before forming a team, the Team Leader must identify the relevant laws, assess the costs of compliance, and understand the consequences of non-compliance, which can include fines or other penalties. They also need to ensure the team fits within the national disaster management framework and is formally integrated into national disaster planning.

4 Technical Rescue Team Development

4.1 Phases

4.1.1 Phase I: Assessment of Community Risks and Rescue Needs

(a) Conduct a Risk Assessment

Before establishing a technical rescue or USAR team, the sponsoring organisation must conduct a comprehensive risk assessment to identify local hazards and evaluate potential rescue needs. This process supports evidence-based decision-making and provides justification to political and financial authorities.

Key questions include:

- What are the most significant natural or human-made hazards in the community?
- What would be the impact if the worst-case scenario occurred today?
- How would the community respond if no local capacity existed?
- What would be the human, environmental, and reputational consequences of non-preparedness?

The assessment should:

- Review historical incident data and emerging risks (e.g. new construction, infrastructure projects, industrial growth).
- Identify target hazards such as rivers, cliffs, tunnels, industrial facilities, and high-rise buildings.
- Consult with national statistics offices, local authorities, and safety regulators to collect relevant data.
- Develop a list of specific high-risk locations requiring specialist rescue capability.
- Evaluate the frequency and nature of past technical rescues in the response area, and anticipate potential new hazards based on planned or ongoing developments

All communities, regardless of size, face potential risks (e.g. transportation accidents, construction collapses, or industrial incidents) that may require technical rescue expertise. The types of industries in the community can guide officials in prioritizing technical rescue training based on the most likely incidents associated with those industries.

(b) Analyse Risk Data

Analyse collected data to project the likelihood and potential severity of technical rescue incidents.

Typical community hazards may include:

- Confined spaces/ restricted access (tunnels, tanks, sewers).
- Waterways and flood-prone areas (swift or calm water rescue).
- Industrial and agricultural sites (machinery entrapment, hazardous materials).
- Cliffs, ravines, or mountains (rope and high-angle rescue).
- New or aging structures (collapse or trench rescue).
- Transportation networks (road, rail, and air incidents).

(c) Establish a Risk Threshold

Communities must define an acceptable level of risk and determine when that threshold warrants forming a dedicated rescue team. This requires balancing the risk to the public against the risk to responders. Rescuers face varying hazards depending on the discipline for example, asphyxiation (confined space), drowning (water), falls (rope), or secondary collapses (structural).

Trained rescuers operate within defined capacity limits; untrained spontaneous responders do not. Communities must therefore ensure that technical rescues are undertaken only by properly trained and equipped personnel.

The outcome of the risk analysis should define:

- Whether a technical rescue or USAR team is justified.
- Which disciplines are required (e.g. rope, trench, structural collapse, confined space, water).
- The appropriate level of capability (single- or multi-discipline).

Initial development should prioritise one core discipline, establishing proficiency before expanding into additional areas.

4.1.2 Phase II: Planning**(a) Establish a Planning Committee**

Form a technical rescue development committee comprising competent planners and prospective team leaders. The committee should include members with relevant operational experience and at least one senior manager to provide direction and ensure alignment with organisational goals.

The committee's tasks include defining:

- The mission statement and objectives.
- The organisational structure, including command hierarchy, administrative and decision-making processes.
- Personnel requirements and selection criteria.
- Equipment, vehicles, and training requirements.
- A clear implementation timeline.
- Initial and ongoing proficiency required training.

Once the team type is determined, the sponsoring organisation should create a plan covering personnel, equipment, and training. This plan should include leadership structure, record-keeping, equipment inventory, program oversight, and political support requirements

(b) Determine Existing Capabilities

Identify existing assets including equipment, vehicles, trained personnel, and facilities that can support team formation. Leveraging existing capacity reduces start-up costs and accelerates readiness.

(c) Develop a Concept of Operations (CONOPS)

Create a Concept of Operations to define how the team will operate, its response triggers, resource deployment, and integration with existing emergency management structures. This document demonstrates planning maturity and provides a framework for developing detailed Standard Operating Procedures (SOPs).

(d) Establish a Programme Management Structure

Assign key management roles, including:

- **Programme Officer** – overall coordination, administration, and reporting.
- **Training Officer** – training development, delivery, and certification tracking.
- **Equipment Officer** – equipment procurement, maintenance, and cache management.
- **Administrative Support/Scribe** – documentation, data management, and logistics tracking.

A defined management structure ensures accountability and continuity through all development phases.

(e) Develop a Staffing Plan

Determine team size based on the selected disciplines and anticipated operational demands. Ensure sufficient personnel for all command and tactical roles, incorporating redundancy as per INSARAG's 2:1 staffing ratio (two qualified members for each deployable position).

Trench, structural collapse, and high-angle operations are staffing intensive and must be resourced accordingly. Staffing plans should also specify personnel per rescue unit or vehicle.

(f) Identify Equipment and Vehicle Requirements

Develop a discipline-specific equipment list, then consolidate into a single procurement plan. Where resources already exist, centralise or catalogue them for rapid deployment. Prioritise purchases that enhance personnel safety before those that expand capability. Plan for redundancy as critical equipment must have backup. Identify suitable vehicles or trailers for personnel and cache transport; conversion of existing assets or donated vehicles may be viable options.

(g) Identify Training Requirements

Define required training for all rescue disciplines, ensuring compliance with national or occupational safety standards. Identify training needs based on the team's focus and any local or state regulations. Determine training delivery methods, providers, schedules, and establish a plan for developing an internal cadre of instructors to support ongoing training and capacity building.

(h) Plan for Recurring Training

Develop a sustainment training plan that maintains member competency through periodic exercises and refresher courses. Where national standards exist, align with established continuing education requirements. Account for associated costs in annual budgets.

(i) Estimate Costs and Develop a Budget

Prepare a detailed costed implementation plan covering:

- Personnel hours and training.
- Consumables and PPE.
- Equipment and vehicles.
- Communications and medical supplies.
- Facility use, insurance, and logistics.
- Travel, vaccinations, and post-deployment care.

Budgeting must include the design of training areas or access to local target hazards for realistic training. Conduct market research with suppliers to validate pricing and ensure comparability.

Differentiate between essential start-up costs and future capability expansion to facilitate phased implementation.

(j) Obtain Management Support

Gain formal endorsement from organisational leadership by clearly articulating the operational, reputational, and community benefits of forming a team. Prepare supporting evidence, examples from other jurisdictions, and visual materials (e.g. presentations, case studies) to communicate the value proposition effectively.

(k) Obtain Political Support

Political endorsement is essential for sustained funding. Anticipate and prepare responses to common questions regarding cost, frequency of use, and inter-jurisdictional cooperation. Provide evidence of hazard exposure, incident history, and potential liabilities of non-preparedness. Engage with elected officials early to build advocacy and ownership. Below is a list of tips that may help the sponsoring organisation win political support:

- Be sure to have support from the sponsoring organisation before going to the elected officials.
- Discuss the concept of a team with relevant elected officials.
- Prepare a list of hazards in the response area and note the dangers and risks associated with each. Give this to the elected officials.
- Create a video or slide presentation that will demonstrate the hazards that exist in the area. Be sure to note the risks presented by each to both citizens and rescuers.
- Discuss what will be the acceptable risk thresholds.
- The sponsoring organisation may gather action pictures of rescue teams already formed to demonstrate team capabilities.
- Have charts prepared that demonstrate the need for a team and show the number of rescue incidents the sponsoring organisation has ran in the past and expect to run in the future.
- Have charts prepared that outline a plan for developing the team.

- Be prepared to discuss regulations, such as those for confined spaces, which may require the sponsoring organisation to train personnel to a certain rescue level to make certain rescues. This alone may justify the team.
- Become familiar with other rescue programmes around the region or country that will serve as examples.

(I) Develop Partnerships

Establish partnerships with industry, government, and regional organisations to share resources, facilities, and funding. Local industries may benefit from cooperative confined space or hazardous environment rescue agreements.

The **INSARAG Regional Group** provides a platform for Member States and teams to explore technical and financial collaboration, including donor engagement at the regional level.

4.1.3 Phase III: Development of the Team

(a) Selection of Team Members

Team member selection must align with the operational requirements identified during the planning phase. Core members should be deployable immediately, while additional personnel (volunteers or reserve members) can provide surge capacity when available.

Key selection criteria include:

- Proven technical and operational competence.
- Relevant professional or trade experience (e.g. construction, rope access, EMS, engineering).
- Commitment to ongoing training and operational readiness.
- Medical fitness and availability for deployment.

A structured recruitment process should include:

- Soliciting expressions of interest.
- Completion of a short skills and motivation questionnaire.
- Formal interviews and reference checks.

Expectations including training frequency, deployment readiness, and time commitments must be clearly defined before appointment. Priority should be given to candidates with medical training or multidisciplinary experience, as technical rescue operations often require an integrated medical and rescue capability.

(b) Team Training

Teams must complete an initial foundational training programme covering:

- Equipment familiarisation and maintenance.
- Discipline-specific technical rescue skills.
- Safety protocols and hazard recognition.
- Command, control, and communication procedures.
- Medical and casualty management skills.

Training should include both theoretical and technical instruction as well as practical scenario-based exercises.

The INSARAG stair-step methodology should be followed, beginning with basic principles, then progressing to complex, multi-discipline exercises.

Whenever possible, teams should train jointly across disciplines to build interoperability and teamwork. Realistic training environments such as construction sites, disused buildings, or trenches should be used through cooperation with local contractors or agencies, following a full risk assessment.

Ongoing refresher training and certification maintenance are essential for sustained readiness.

(c) Procurement of Equipment and Uniforms

Procurement must align with the team's mission profile and previously defined equipment plan

Begin with essential safety and rescue equipment, expanding capability as experience and funding allow. Ensure all equipment meets recognised international standards (e.g. EN, NFPA, or ISO). Uniforms should be durable, identifiable, and compliant with occupational safety standards.

(d) Vehicles and Storage

Vehicle selection should consider the type of operations, environment, and payload requirements. Detailed vehicle layout plans must be prepared to ensure efficient storage and accessibility of equipment. Allow for at least 30% growth capacity for future equipment additions.

Secure, climate-appropriate storage must be provided for vehicles and cache. Vehicle design should include safe mounting, proper weight distribution, and appropriate towing capacity (if trailers are used).

Teams should also assess insurance requirements for each jurisdiction, region, state or county in which they may operate, ensuring they carry appropriate coverage for the operating area.

(e) Administrative Support and Record Management

Effective administration underpins operational readiness. Dedicated personnel should be assigned to maintain the following records:

- Team roster and personnel profiles.
- Medical and immunisation records.
- Licences, certifications, and specialist registrations.
- Training attendance and qualification records.
- Equipment inventories, inspection, and maintenance logs.
- Deployment plans, activation procedures, and after-action reports.
- Budget, expenditure tracking and asset management records.

Administrative staff must also manage training schedules, monitor equipment calibration, and maintain deployment readiness documentation. These records support accountability, audit compliance, and future capability development.

(f) INSARAG First Responder Training Programme

To support local capacity development, INSARAG provides the First Responder Training Programme, adaptable to national or local contexts. This programme is designed for community-based responders and emergency services personnel who may be first to arrive at a sudden-onset disaster.

Programme components:

- INSARAG First Responder Course.
- INSARAG First Responder Training of Trainers Course.
- Participant training materials and instructor guides.

Learning objectives:

- Recognise generic hazards and risks in a collapse environment.
- Conduct rapid area assessments.
- Perform surface search, rescue, and basic life-saving actions.
- Coordinate with organised emergency services.
- Understand national, regional, and international USAR systems.
- Manage spontaneous volunteers on-site.

Further details regarding the programme are available at www.insarag.org or from the INSARAG Secretariat.

4.1.4 Phase IV: Development of Standard Operating Procedures (SOPs)

(a) Establish Administrative and Operational SOPs

SOPs are essential for safe, coordinated, and efficient technical rescue operations. They should align with the approved CONOPS and integrate with existing organisational procedures.

SOPs define:

- Command structure and roles.
- Equipment use and maintenance.
- Operational techniques and safety standards.
- Training, certification, and personnel management.
- Activation, deployment, and demobilisation procedures.

SOPs should be consolidated into a single manual, divided into Administrative SOPs and Operational SOPs:

Administrative SOPs

Address governance and management, including:

- Chain of command and reporting lines.

- Certification and training requirements by discipline.
- Equipment cache management, inspection schedules, and maintenance cycles.
- Minimum staffing levels and role-specific qualifications.

Operational SOPs

Define tactical operations, including:

- Types of incidents covered (collapse, rope, trench, confined space, water).
- Dispatch and response procedures.
- Scene management and command structure (aligned with Incident Command System principles).
- Technical operating procedures and discipline-specific tactics.
- Applicable local or national regulatory requirements.
- Activation, deployment and demobilisation processes.

Operational SOPs should include tactical worksheets or command checklists for each discipline to assist on-scene decision-making.

(b) SOP Review and Continuous Improvement

SOPs must be reviewed at least annually and following any major incident, exercise, or identified gaps. Updates should reflect lessons learned, new equipment, or revised safety standards. Regular review ensures the team maintains compliance with INSARAG Guidelines, national legislation, and international best practice.

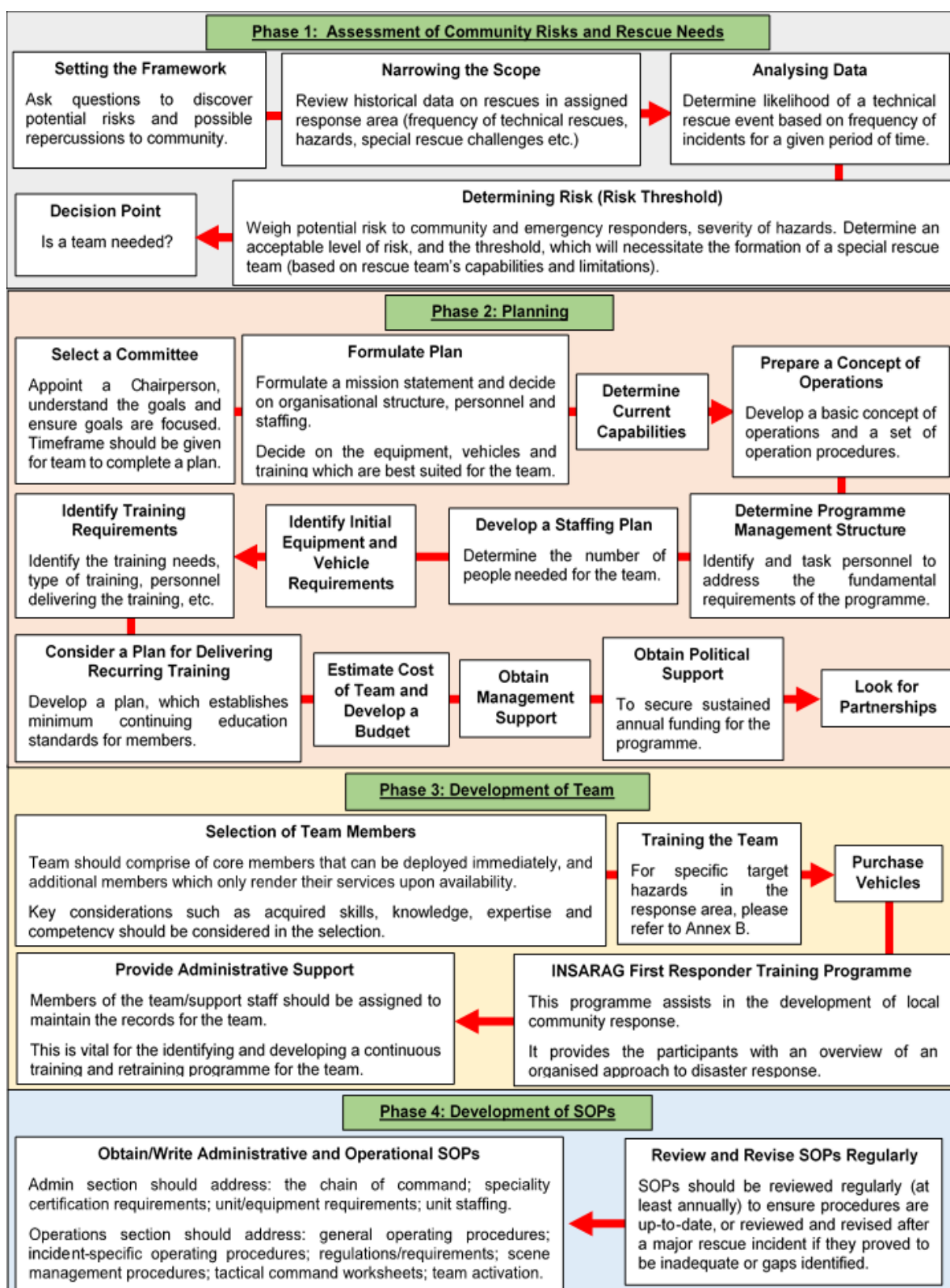


Figure 1: How to form a technical rescue team

4.2 Funding

4.2.1 Financial Requirements and Cost Considerations

The establishment and sustainment of a technical rescue or USAR team requires careful financial planning. A clear understanding of where funds are allocated and how they will be sustained is essential for long-term viability. Budgeting should account for consumables, operating expenses and personnel costs. Financial planning should also consider the level of community support and the resources available to maintain operational readiness.

(a) Training Costs

Training represents one of the largest initial investments and must not be compromised. Comprehensive, competency-based training is essential to ensure safety and operational effectiveness.

A phased training approach can help manage costs:

- **Year 1:** Basic awareness-level training for all personnel.
- **Year 2:** Operations-level training.
- **Year 3 and beyond:** Technician-level and specialist qualifications for selected members.

Commanders and team leaders should also attend training to develop an understanding of rescue operations and equipment use. Establishing an internal cadre of certified instructors reduces reliance on external providers and ensures programme sustainability.

(b) Continuing Education and Skill Retention

Technical rescue skills degrade rapidly without practice; continuous training is therefore essential to maintain proficiency, reinforce existing skills and develop new competencies. A minimum of 48 hours of continuing education per year is recommended, supplemented by periodic certification renewals and team exercises.

Options include:

- In-house refresher drills (low cost, non-certifying).
- Accredited re-certification courses (mandatory for regulated disciplines).
- Joint exercises with neighbouring agencies or INSARAG partners.

Training budgets must include costs for instruction, materials, equipment wear, and personnel time.

(c) Equipment and Maintenance

Equipment costs vary according to team type and level of capability. Basic rescue tools (ropes, harnesses, ladders, hand tools) may already exist, while specialised items such as search cameras, structural monitoring systems, or advanced medical equipment represent significant additional expense.

Budgeting must include:

- Equipment procurement and replacement cycles.

- Maintenance, calibration, and inspection costs.
- Storage facilities and security measures.
- Consumables (timber, cutting blades, medical supplies).

Cache management should ensure readiness while maintaining accountability and control of high-value assets.

(d) Vehicles and Transport

Vehicle costs include acquisition or retrofitting, maintenance, and fuel. These may range from light utility units to heavy rescue trucks or trailers, depending on operational needs. Where feasible, vehicles may be donated or repurposed from government or private sector partners.

Budget for:

- Vehicle modification and equipment integration.
- Annual servicing, inspection, and insurance.
- Secure, weather-protected storage.

(e) Insurance and Legal Liabilities

Insurance coverage is frequently overlooked but remains a critical element of risk management. Organisations must ensure that personnel, equipment, and vehicles are adequately insured and that existing policies cover technical rescue operations such as confined space or water rescue.

Consultation with legal and insurance specialists is advised to:

- Extend existing policies to new operational risks.
- Confirm coverage for training, deployment, and mutual aid.
- Ensure compliance with occupational health and safety legislation.

Failure to provide trained and properly equipped rescuers may expose the sponsoring organisation to liability or regulatory penalties.

(f) Justification of Expenditure

All expenditures must be evidence-based and directly linked to identified community risk and legal obligations. Decision-makers will require justification for costs, particularly in smaller jurisdictions or low-frequency risk environments.

Effective justification includes:

- Documented risk assessments and incident data.
- Regulatory compliance requirements under occupational health and safety law.
- Reference to INSARAG Guidelines and national disaster management frameworks.
- Lessons from previous incidents or identified capability gaps.

Transparency and alignment with community safety priorities strengthen the case for sustained funding.

4.2.2 Funding Sources and Financial Models

Funding for a technical rescue or USAR capability can be derived from a combination of public, private, and donor sources. A diversified funding strategy improves sustainability and resilience against budget fluctuations.

Potential funding sources include:

1. Direct Government Funding:

- Allocations from national, regional, or municipal emergency management budgets.
- Inclusion within national disaster risk reduction or civil protection funding streams.

2. Cost-Sharing Arrangements:

- Cooperative agreements between neighbouring jurisdictions or agencies.
- Shared procurement, training, or facility use.

3. Public–Private Partnerships (PPP):

- Collaboration with local industry, utilities, or infrastructure operators.
- Particularly relevant for confined space or industrial rescue preparedness.

4. Donor and Grant Funding:

- International development partners, donor governments, and multilateral organisations.
- INSARAG Regional Groups can assist in connecting Member States with donor opportunities.

5. Community and Charitable Support:

- Contributions from civic groups, service clubs, or non-profit foundations.
- Public fundraising for equipment or facilities.

6. Cost Recovery and User Fees:

- Recovery of costs for services rendered to private entities.
- Fees integrated into permits, licensing, or construction safety compliance schemes.

7. Corporate Social Responsibility (CSR) Contributions:

- Donations of equipment, vehicles, or technical expertise from private sector partners.

Summary of Key Funding Principles

- Align funding requests with documented community risk and national standards.
- Ensure multi-year budget planning to maintain capability over time.
- Develop internal training and maintenance capacity to reduce long-term costs.
- Maintain transparency and accountability through detailed record keeping.
- Leverage partnerships and shared resources to maximise efficiency.

4.3 Personnel and Staffing

4.3.1 Type of Personnel Required

Technical rescue operations demand personnel with a high degree of mechanical aptitude, physical strength, and problem-solving ability. Ideal team members are resourceful, adaptable, and comfortable operating in challenging, high-risk environments.

Desirable skill sets include:

- Trade skills: carpentry, plumbing, electrical, welding, mechanics, or heavy equipment operation.
- Professional skills: engineering, paramedicine, logistics, communications, or technical coordination.
- Recreational or volunteer experience in rope access, caving, diving, or water rescue disciplines.

Personnel selection should match the anticipated operational complexity of the team. Rescue is a patient-centred activity. Therefore, qualified medical personnel should be recruited to match the expected mission scope. Team members must be willing to meet the minimum standards for training, certification, and annual recertification as required by national authorities and INSARAG Guidelines.

4.3.2 Physical and Mental Fitness, Health Monitoring

Due to the physical and psychological demands of USAR and technical rescue operations, all team members must meet the Member State's established fitness standards. They must be capable of lifting, carrying, and deploying heavy equipment, as well as maintaining operational effectiveness in austere environments for extended periods.

The sponsoring organisation should implement a medical and health monitoring policy, under the oversight of the USAR Medical Director, to ensure personnel are fit for deployment. This policy should cover:

- Pre-selection and periodic health assessments.
- Monitoring of physical and mental resilience.
- Vaccination and immunisation requirements in line with WHO and national guidance.
- Maintenance of accurate and current medical records.

The absence of such a policy increases the risk of:

- Serious illness, injury, or death in austere environments.
- Early demobilisation due to medical incapacity.
- Disruption of operations through medical evacuation.
- Burdening local healthcare systems during deployment.

The USAR Medical Director, in accordance with INSARAG Medical Working Group guidance, holds clinical authority for establishing medical readiness policy and ensuring compliance.

4.3.3 Personnel Selection Process

Selection of personnel should be systematic, transparent, and competency based. Applicants should be evaluated for motivation, teamwork, technical aptitude, prior experience, and leadership potential.

Recommended selection process:

1. **Call for applications** – announcement of team formation and invitation for expressions of interest or CV submissions.
2. **Screening and interviews** – assessment of motivation, commitment, and understanding of team responsibilities.
3. **Physical and skills assessment** – evaluation of fitness and task-specific capabilities.
4. **Commitment agreement** – signing of a service agreement (for example minimum of five years) to ensure return on investment in training and equipment.

For volunteer-based organisations, a training reimbursement clause may be used if personnel leave shortly after receiving funded training. Selection decisions should ensure diversity of skill sets while maintaining operational discipline and readiness.

4.3.4 Integration of Firefighters, Emergency Medical Services (EMS), and Non-Specialist Personnel

Technical rescue teams must operate as an integrated part of the community's wider emergency management system. Non-specialist responders (firefighters, EMS personnel, or public works staff) may provide essential support during incidents but must not undertake technical rescue tasks without appropriate training.

To manage this, organisations should adopt a tiered response model:

- **Tier 1:** First responders, trained to awareness level of scene safety, hazard recognition, and information collection.
- **Tier 2:** Operations level, rescuers trained and equipped for limited technical tasks.
- **Tier 3:** Technician-level specialists with full rescue capability.

All personnel should understand what actions must not be taken, such as:

- Entering trenches that have not been shored.
- Entering confined spaces without atmospheric testing, ventilation, PPE.

Core first-responder actions include:

- Scene size-up and information gathering.
- Establishing safety perimeters and isolating hazards.
- Implementing command and control structures.
- Supporting specialist rescue teams upon arrival.

Integration of EMS personnel into rescue operations is critical. Paramedics and medical staff must have timely access to casualties for assessment and stabilisation once the scene is

secure. Where possible, medically trained personnel should also receive technical rescue training to operate safely in hazardous zones.

4.3.5 Inclusion of Technical and “Citizen Experts”

Teams may benefit from incorporating individuals with specialist expertise such as:

- Structural or civil engineers.
- Canine search handlers.
- Medical doctors or surgeons.
- Construction or demolition professionals.

While these experts enhance capability, their inclusion requires clear administrative and legal arrangements, including:

- Defined roles and responsibilities.
- Insurance coverage for injury, liability, and malpractice.
- Familiarisation with field operations, team structure, and deployment protocols.

When seeking INSARAG classification, all personnel, including external experts, must comply with the competency and deployment requirements defined in INSARAG Guidelines.

4.3.6 Minimum Staffing Requirements

The number of personnel required for a technical rescue team depends on:

- The type and scope of rescue disciplines.
- The command structure and operational duration.
- The number of personnel needed to sustain 24-hour operations safely.

General staffing guidance:

- **Confined Space Rescue:** Minimum of two entry rescuers supported by two standby rescuers.
- **Structural Collapse (Reconnaissance):** At least three personnel, two specialists and one safety supervisor.
- **Trench Rescue:** Labour-intensive operations may require additional staff unless advanced shoring systems are available.
- **Rope Rescue:** Multiple technicians are needed to set up and operate belay, anchor, and haul systems concurrently.

Each discipline should have a dedicated supervisory structure, typically including:

- Technical Rescue Team Leader.
- Technical Rescue Safety Officer.
- Equipment Officer.
- Personnel/Training Officer.

Staffing plans must ensure continuous operational coverage while maintaining normal daily service delivery. If sufficient trained and equipped personnel are unavailable to conduct operations safely, the team must delay entry until appropriate resources are present. Safety is paramount and non-negotiable.

Summary of Key Staffing Principles

- Recruit personnel with mechanical aptitude, discipline, and adaptability.
- Maintain high medical, fitness, and psychological standards.
- Ensure selection and retention policies protect training investment.
- Integrate with wider emergency services through clear command structures.
- Include subject-matter experts where appropriate, under formal agreements.
- Staff to safe minimum levels and never exceed operational capacity

5 Technical Rescue Training

5.1 Specific Technical Rescue Training Examples

Level	Capability	Hazard Zone(s)	Equipment / PPE Requirements
Awareness	Understand hazards; scene staging; safe working in non-hazardous areas.	Cold zone (support zone)	Basic protective clothing; hazard recognition gear.
Operations	Identify hazards; use rescue equipment; apply limited rescue techniques; support role.	Cold & Warm zones (transition zone)	Appropriate protective clothing & equipment for warm zone operations.
Technician	Perform, supervise, coordinate complex rescue operations using advanced technical methods.	Warm & Hot zones (exclusion zone)	Full PPE, specialised rescue and safety equipment.

5.2 Discipline-Specific Training Examples

Here are sample training curricula for several rescue disciplines illustrating how the levels may be applied. Duration estimates are indicative and may be adapted to local needs and hazards.

Discipline	Awareness Level	Operations Level	Technician Level / Specialist
Rope Rescue	~1 day: basic rope properties, knots, anchor concept, safety, rope hazards.	~2 days: rigging, belaying, patient packaging, low-angle evacuations.	~1 week: advanced rigging, anchors, high-angle, Tyrolean/telpher systems, stokes basket extrication, helicopter-tie-ups.
Confined Space Rescue	Few hours: regulation awareness, hazard recognition, what precludes entry.	Several days: atmospheric monitoring, safe entry, basic retrieval systems.	~40 hours+: advanced retrieval, command & communication, ventilation, complex retrieval in varied confined spaces.
Trench Rescue	~2 hours: hazards, scene security, initial actions.	Several days: shoring techniques, safe entry, support operations.	~10 days: advanced victim removal, long-duration operations, utility controls.
Structural Collapse	~8 hours: collapse types, initial size-up, incident command.	2-3 days: debris search, utility controls, basic stabilisation.	~5 days: heavy equipment use, tunnelling / excavation, advanced hazard stabilisation.
Water Rescue	Few hours: water hazards, shore-based rescue, safety and basic rescue tools.	~1 week: swift-water, ice rescue, hypothermia management, boat/shore-based rescue techniques.	~1 week or more: all water rescue modalities, helicopter / boat operations, contaminated water, full victim retrieval.

5.3 Sources of Training

- National authorities.
- Accredited rescue training institutions.
- Private specialist providers.
- Inter-agency or mutual aid partnerships.

5.4 Developing a Training Plan

Key components for a robust training plan include:

1. Hazard-Driven Design

- Base training curricula on local target hazards (e.g. floods, cliffs, industrial sites).
- Include realistic scenario training in environments similar to those the team will face.

2. Discipline & Level Allocation

- Decide which personnel will train to what level in each discipline (Awareness / Operations / Technician).
- Identify potential instructors / trainers early.

3. Recertification & Skill Maintenance

- Regular refresher training.
- Skills practice at set intervals to avoid degradation.
- Periodic assessment of competence.

4. Documentation & Evaluation

- Maintain individual training records: level, hours, skills demonstrated.
- Team-level documentation: curricula delivered, costs, lessons learned.
- Incident reviews to feed back into training improvement.

5. Teamwork & Interoperability

- Joint exercises combining multiple disciplines.
- Training on command & control, communications, safety overlap.

6 USAR Team Training, Roles, and Responsibilities

6.1 Management

Team Leader / Deputy Team Leader

Prerequisites:

- Occupy an existing senior management position in the home organisation
- Understanding of INSARAG methodology
- Registered user of VOSOCC
- Functional English and cultural awareness
- Completion of UN BSAFE security awareness course

Roles & Responsibilities:

- Overall command of strategy, tactics, and safety
- Comprehensive knowledge of all USAR Team functions
- Supervise internal and external coordination
- Personnel management: communication, cooperation, coordination, negotiation, conflict resolution, critical incident debriefing, staff welfare
- Strategic and tactical planning, media interaction, financial oversight

Planning Officer

Prerequisites:

- Senior management experience
- INSARAG methodology understanding
- VOSOCC user
- Computer literacy and GIS applications
- Functional English, cultural awareness
- UN BSAFE course completion

Roles & Responsibilities:

- Collect, collate, and analyse operational data
- Develop and disseminate visual and written Plans of Action
- Monitor plan implementation, recommend revisions
- Internal coordination and support for staff welfare
- Record keeping, reporting, and post-mission documentation

Operations Officer

Prerequisites:

- Senior management position
- Understanding of INSARAG methodology

- VOSOCC user
- Functional English, cultural awareness
- Documented USAR operations experience
- UN BSAFE course completion

Roles & Responsibilities:

- Operational control and tactical decision-making
- Implement operational Plan of Action
- Coordinate with local resources, LEMA, NGOs
- Crew accountability, risk mitigation, and resource allocation
- Maintain operational records and post-mission reports

Liaison Officer**Prerequisites:**

- Management experience in home organisation
- Prior liaison experience
- Understanding of UNDAC methodology, UN Cluster System, INSARAG principles
- VOSOCC user
- Functional English and cultural awareness
- Computer literacy and UN BSAFE completion

Roles & Responsibilities:

- Represent USAR team in joint operations and coordination with local and international partners
- Participate in planning, implementation, and monitoring of operational plans
- Media engagement and information management
- GPS awareness and post-mission reporting

Safety Officer**Prerequisites:**

- Certified Safety Officer
- Management experience
- UN BSAFE course completion
- Functional English and cultural awareness

Roles & Responsibilities:

- Oversee team safety and enforce PPE compliance
- Internal coordination with Team Leader, Medical Manager, Hazmat Technician
- Implement risk mitigation and crew accountability
- Fatigue management, hygiene, and rest/recovery oversight

- Record keeping and post-mission safety reporting

6.2 Logistics

Logistics Manager & Logistics Technician

Prerequisites:

- Management or technician experience in logistics
- VOSOCC user
- Computer literacy and UN BSAFE completion

Roles & Responsibilities:

- Accountable for tools, equipment, and resource management
- Coordinate transport, supply, and base-of-operations logistics
- Financial delegation
- Record keeping and post-mission logistics reporting

Communications / IT Specialist

Prerequisites:

- Communications/IT experience
- VOSOCC user
- Functional English and UN BSAFE completion

Roles & Responsibilities:

- Maintain communications within the team, with local authorities, and internationally
- Operate and maintain IT, UHF/VHF radios, and geospatial technologies
- Information management and post-mission reporting

6.3 Rescue Operations

Rescue Team Officer / Rescue Technician

Prerequisites:

- Operational management experience
- USAR certifications
- UN BSAFE course completion

Roles & Responsibilities:

- Lead and supervise tactical rescue operations
- Ensure team welfare, safety, and adherence to operational plans
- Tactical problem-solving and operational control

- Communication and post-mission operations reporting

Hazmat Technician

Prerequisites: Certified Hazmat Technician

Roles & Responsibilities:

- Monitor hazardous substances and environmental conditions
- Implement gross and technical decontamination
- Maintain Hazmat equipment
- Tactical problem-solving, enforce safety standards, and post-mission reporting

Rigging Specialist

Prerequisites: Knowledge of heavy equipment and construction/demolition methods

Roles & Responsibilities:

- Supervise rigging, lifting, anchoring, and shoring operations
- Ensure safety in heavy lifting scenarios
- Coordinate with engineers and provide tactical solutions

6.4 Search Operations

Technical Search / Search Dog Handler

Prerequisites: Certified technical search or dog handler

Roles & Responsibilities:

- Conduct search operations using dogs, cameras, and listening devices
- Map, grid, and locate victims
- Maintain tools and equipment
- Coordinate with Rescue Officers and Operations Officer
- Post-mission reporting

6.5 Medical Operations

Prerequisites: Licensed medical professionals (doctor, nurse, paramedic)

Roles & Responsibilities:

- Provide medical care for team members and search dogs
- Deliver emergency care to victims until handover to local medical authorities
- Monitor team health and advise on safety and environmental hazards

- Prepare post-mission medical reports

6.6 Hazmat First Responder Training

Training Includes:

- Hazmat recognition
- Emergency Response Guide (ERG) usage
- Safety and health considerations
- Initial control and incident management

6.7 Incident Command System (ICS) Training

Training Includes:

- ICS principles and structure
- Facility management and resource allocation
- Action planning, activation, demobilisation, and operational closure

6.8 Basic USAR Training

Training Includes:

- Introduction to USAR and risk assessment
- Heavy lifting, shoring, ropes, and knots
- Ladder rescue, backboard securing, patient packaging
- Search methods and INSARAG marking

6.9 INSARAG Guidelines and Principles

Training Includes:

- Protocols, guidelines, and procedures
- Unified Coordination Centre (UCC) awareness
- Minimum training standards for Light, Medium, and Heavy USAR Teams.

6.10 Structural Engineer

Professional Certification and Qualifications

A Structural Engineer must possess a recognised **Bachelor's degree in Engineering** as the foundational step toward professional certification. In most countries, the degree programme must be accredited by a national or international professional engineering body. Following graduation, the engineer must complete defined requirements, including:

- Documented **professional experience** under supervision;
- Successful completion of **professional examinations** or assessments; and
- Demonstration of **competency in engineering ethics and practice**.

Upon fulfilling these requirements, the engineer attains professional certification, designated by titles such as:

- **Professional Engineer (P.Eng / PE)** – United States, Canada, South Africa;
- **Chartered Engineer (CEng)** – United Kingdom and other Commonwealth countries;
- **Chartered Professional Engineer (CPEng)** – Australia, New Zealand;
- **European Engineer (Eur Ing)** – within the European Union

6.11 USAR Team Operational Levels for INSARAG Classification

USAR Teams seeking INSARAG External Classification (IEC) must first be classified at the national level in their home country. Classification is defined by three operational levels: Light, Medium, and Heavy.

6.11.1 Light USAR Team

Overview:

- Supported by the National Policy Focal Point and national funding arrangements.
- May be developed from existing national capacity or NGOs with government support.
- Provides all five USAR components: Management, Search, Rescue, Logistics, and Medical.

Operational Capability:

- Self-sufficient on a single worksite for 12-hour operational days with 12-hour rest, over a 5-day period.
- Equipped to conduct technical and/or canine search and rescue in collapsed structures of wood, masonry, or light reinforced concrete.
- Capable of independent international transport.
- Able to conduct ASR3 operations on allocated worksite and integrate into INSARAG reporting mechanisms.
- Supports the RDC or UCC with one liaison personnel during deployment.

Team Composition:

- Typically 17–20 personnel.
- Positions may be combined for efficiency in limited-resource scenarios.

Technical Scope:

- Must demonstrate the capabilities of Medium/Heavy teams with specific exceptions (e.g., complexity of structural collapse operations).

6.11.2 Medium USAR Team

Overview:

- Recognised by national government as a domestic response resource.
- Supported for international humanitarian relief, including USAR deployments.

Operational Capability:

- Conduct search and rescue operations in collapsed or failed structures made of:
 - Heavy wood
 - Reinforced masonry
 - Lightweight steel
 - Wood frame and other lightweight construction styles
- Expected to have either canine search or technical search function (preferably both).

Technical Scope:

- Full USAR operational capabilities for domestic and international deployments, including multi-discipline rescue operations.

6.11.3 Heavy USAR Team**Overview:**

- Builds on all Medium team capabilities.
- Recognised for highly complex structural response and multi-site operations.

Operational Capability:

- Able to conduct search and rescue in two separate locations simultaneously.
- Capable of operations in collapsed structures of reinforced concrete or steel-frame construction.
- Must include both canine search and technical search functions.

Technical Scope:

- Full operational capacity for complex urban search and rescue scenarios, with all USAR components fully staffed and equipped.

Notes on Classification

- Light teams are generally smaller, with some role-combining for efficiency.
- Medium and Heavy teams are expected to maintain specialised personnel and equipment for advanced operations.
- INSARAG IEC requires teams to demonstrate self-sufficiency, operational readiness, and integration into international coordination mechanisms.

7 USAR Deployment Considerations

7.1 USAR Training and Development Methodology

Training and development—both initial, joint, and recertification—are critical to the successful implementation of any local USAR capacity-building project and must address all components of the team.

The **USAR Management and Administration** structure is responsible for developing a standardised process to identify and deliver training based on operational needs and capability development objectives.

This process should include:

- Identification of existing resources, procedures, and competencies.
- Self-evaluation to determine actual operational capacity.
- Gap analysis to identify training requirements.
- Identification of preconditions for training effectiveness.

Unlike the singular focus of USAR first responders, the development of a full USAR team requires the coordinated training of personnel across all functions within the team. Therefore, to ensure consistent development of USAR capacities globally, INSARAG recommends a position-based training methodology—linking individual training directly to specific functional roles within the team.

Each functional position within a USAR Team has an associated role description and competency framework. These are common across all levels of USAR Team capacity (Light, Medium, Heavy), with variations reflecting differing operational demands. The full list of functional positions and associated descriptions are detailed in chapter 6.

INSARAG further recommends that training requirements be linked to team positions and structured as modular learning packages (“USAR Modules”), enabling standardisation and scalability of national and international USAR capacity development.

7.2 Transition from Rescue to Early Relief

In many disaster environments, USAR operations overlap with early relief activities. USAR teams may, at the request of the Local Emergency Management Authority (LEMA), assist in limited early relief operations, but must only undertake tasks within their certified capacity and competence.

The USAR Team Leader, in consultation with the sponsoring organisation, should determine early in deployment whether the team can assist with early relief. Any such decision must be communicated to the UCC Manager for integration into the wider relief coordination plan.

Typical early relief tasks may include:

- **Situation and Needs Assessments:**
 - Infrastructure (roads, bridges).

- Structural stability.
- Coordination systems.
- Fire safety and prevention.
- Communication networks.
- Electrical power systems.
- Reservoir, water, and sewage integrity.
- Hydro-facilities.
- Food and water distribution networks.
- Shelter distribution and temporary camp establishment.
- **Refugee Camp Assessments:**
 - External and internal safety analysis.
 - Risk and hazard assessments.
- **Water and Sanitation Assessments:**
 - System functionality.
 - Health and contamination risk analysis.
- **Medical and Public Health Support:**
 - Nutrition and health assessment.
 - Medical infrastructure evaluation.
 - Field medical support and care delivery.
- **Donor Centre Logistics Support:**
 - Planning, receiving, and distribution of relief goods.
 - Stock management and record control.
- **USAR Coordination Support:**
 - RDC and UCC staffing.
 - Planning cell support.
 - Liaison and information management.
- **Limited Hands-on Training for Local Responders:**
 - Task-specific familiarisation and mentoring.
- **Logistics Support:**
 - Airport, seaport, and inland transfer point management.
 - Overland transport and warehouse operations.

7.3 USAR Team Positions

USAR Teams rely on a structured composition of personnel, with defined roles and responsibilities to ensure safe, effective, and coordinated operations.

There are **17 identified functional positions**, aligned to the five INSARAG components of a USAR Team:

1. Management

2. **Search**
3. **Rescue**
4. **Medical**
5. **Logistics**

Not all teams will require all positions, and some may have additional roles depending on their classification (Light, Medium, Heavy) and national requirements. What remains essential is that each function is performed consistently according to the team's Standard Operating Procedures (SOPs) and INSARAG Guidelines.

7.4 USAR Team Training Requirements

Each functional role includes defined training requirements, covering both general and role-specific competencies.

Training outcomes are performance-based, defined through Learning Outcomes and Performance Criteria, setting the minimum standards necessary to achieve operational readiness.

Once a USAR Team has been certified for national response, the sponsoring organisation should conduct a readiness analysis to determine whether the team meets the criteria to form part of its government's international assistance framework for collapsed structure response under INSARAG coordination.